

Woolcott Street Bridge

By Bill Phippen

Adjacent to the North Shore railway, between Waverton Station and the North Sydney tunnel another line diverges and crosses a suburban street on an apparently unremarkable steel bridge – Woolcott Street. This bridge is one of the few on the system that can be ‘seen’ by commuters as most bridges are beneath the wheels of their train and thus out of sight.

The North Shore railway was built southwards, started at Hornsby and reaching Milsons Point in May 1893. At that time there was no Harbour Bridge and the line terminated at the water’s edge near the site of the eventual bridge pylon and the current North Sydney swimming pool. Here there was a major interchange between trains, trams and the ferries, as water-borne transport was the only means for the commuters to reach the city. To reach this low-level station the line descended sharply from Waverton and passed through the Lavender Bay tunnel and along the shoreline through what is now Luna Park.



The Carr Street bridge before intense settlement of the area. Cornelius Cardew ARHSnsw 034388

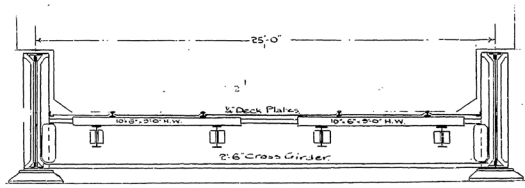
Woolcott Street, then known as Carr Street, was crossed at that time on a double-track steel plate-web girder bridge with a corrugated steel floor. The line was very busy and needed its two tracks to carry the many trains.



A steam-hauled commuter train approaching Waverton after collecting its passengers from Milsons Point in 1922. RS Fookes' Collection ARHSnsw 005414

During the 1920s the Sydney Harbour Bridge was constructed to take the North Shore Line across the harbour at a high level and on to Wynyard. To reach the high deck a new line diverged just south of Waverton and was taken through a new tunnel and into North Sydney Station. Avoiding the downward alignment of the original line and climbing steadily the route included a new station situated on the bridge approaches. This station far above its predecessor took the name of the old terminal station – Milsons Point. The old line through Lavender Bay was kept for storage of trains during off-peak times, using a peculiar zig-zag shunting arrangement beside Waverton station platform. The number of trains which used the line was small and they all followed one another in the same direction before and after the peaks, so retention of two tracks was not warranted. The line was reduced to a single track, though Woolcott Street bridge was still wide enough for two.

The bridge had deteriorated in its early years, mostly through corrosion of its corrugated steel floor which, beneath the ballast, was a trap for damp and silt. The issue was noted in 1913 and plans were prepared for its replacement with a ‘Standard 60’ D.L. Underbridge’.



The bridge planned in 1913 was to be constructed with cross girders and stringer girders under the tracks. ARHSnsw collection.

The new bridge was not built but the ballast was removed, probably about this time. As the bridge's future was uncertain with planning for the Harbour Bridge underway, there was inaction over its repair until 1933 when some extensive repair was carried out by welding supplementary plates over the corroded troughs and in cutting drainage holes so prevent the accumulation of water. By 1991 the bridge was deemed a hazard to traffic below and the road was closed as an underpass, though trains continued to run over it.



Woolcott Street Bridge after its replacement. The new span is single track only. ARHSnsw 235237

In 1993 the bridge was replaced in a single week-end, 14-16 February. The 1893 bridge was cut up and scrapped while the 'new' 80-tonne bridge was swung into place with a 400-tonne crane. A casual inspection of the replacement bridge reveals it to be a riveted plate-web girder. Riveting of steel girders was phased out in favour of welding and bolting in the 1950s so why was the 1993 bridge riveted? The answer is that it is a recycled bridge which had in fact been fabricated in the 1930s.

The relocation of the Lithgow steelworks to Port Kembla in 1928 required a supply of limestone for the blast furnace and the chosen location for the quarry was Marulan, in the Southern Highlands. A direct railway route for delivery of this mineral was required and the very spectacular line from Moss Vale to Unanderra was built including the steep grade down and through the Illawarra escarpment at its eastern end. The line was of single track, ample for the limestone traffic. The ruggedness of the climb and the difficulty of construction precluded any crossing loop being provided between Unanderra and Summit Tank at the top of the long severe grade.



The span in its second use at Dombarton, apparently soon after construction. The track on the right is the line from Unanderra. A train would then reverse under the bridge to a siding from where it could run forward back onto the mainline and over the bridge. About 1943. LG Poole Collection ARHSnsw 048738

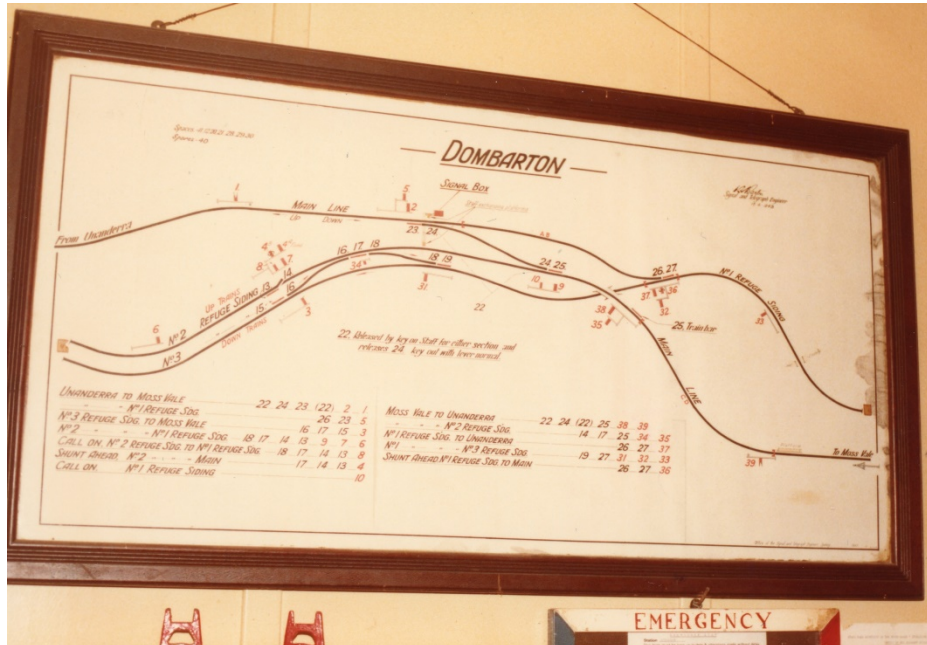
During the Second World War Port Kembla became an important focus of the war effort and more trains had to be run up and down the escarpment. An extra crossing loop had to be made somewhere about midway and the place chosen was named Dombarton as it had no other name or habitation.

Legend has it that senior officers in the Signal Branch were asked to submit names for the new safe working site, and the winner, chosen from a hat, was Dumbarton after the place in Scotland. This name was seen to be a potential slur on the incumbent Chief Signal

Engineer Walter Barton, so a simple change of vowel was made.

Typically, a crossing loop is a short section of two tracks in an otherwise single line where one train can stop and await the arrival of a train travelling in the opposite direction.

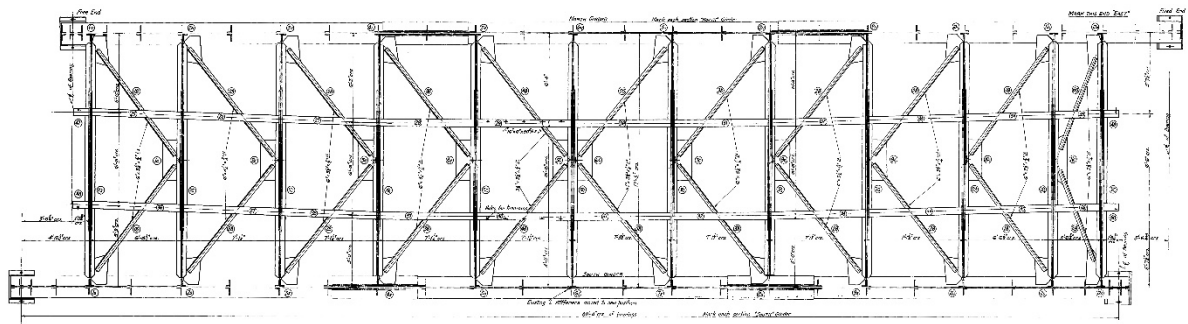
Because of the steep grade this simple design would not work at Dombarton as an uphill train, which would have had the power to climb the grade while it kept moving, would find difficulty in re-starting from a standing stop.



The solution was a unique 'loop' which involved a bridge. Uphill trains would diverge into a near level siding, thus leaving the mainline clear for the oncoming train. The stopped train would then reverse across the main line to other sidings on the opposite side of that line. This siding was in fact slightly 'uphill' as the train reversed along it. From this position, once the OK to proceed had been given, the train would start to roll – downhill – and have some momentum before it once again reached the steep grade towards Summit Tank.

The crossing of the siding from one side of the mainline to the other could not be a level one as that would just have blocked the mainline

and negated the purpose of the loop. The crossing was an underpass and required a bridge and this bridge was the one later used at Woolcott Street. Dombarton crossing loop was opened in May 1943. In the 1980s further amplification of the route was needed and the decision was made to rebuild the line as double track from Unanderra to Dombarton from where a new long tunnel to Maldon would be made. The double-track section was completed in 1987, though the long tunnel has never been proceeded with. The zig-zag crossing loop was no longer needed and was in fact demolished as part of the work, with the riveted steel bridge taken into storage from where it was later taken, shortened, to Woolcott Street.



The Dombarton bridge was skewed with the stringer girders made to follow the curve of the track. ARHSnsw collection.

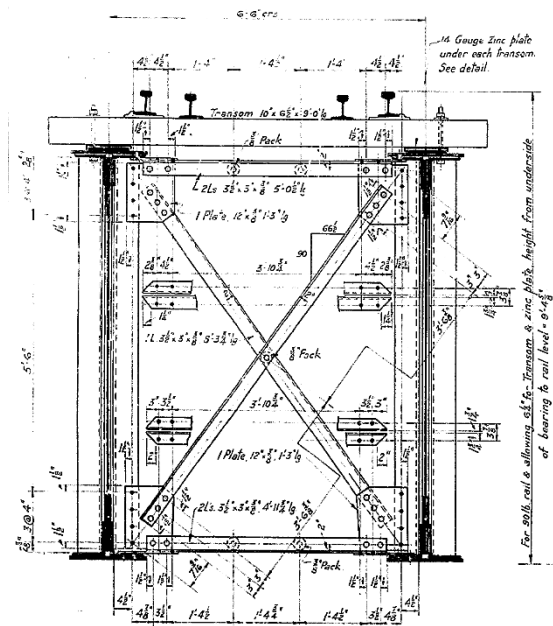
But, amazingly, this is not the whole story of the Waverton span, for even at Dombarton it was already second hand. The Great Western Railway across the Blue Mountains has extraordinarily steep grades, forced by the topography. Another route was identified across the Great Dividing Range from the coast to the west, north of Newcastle following the valley of the Goulburn River, not to be confused with the town of the same name far to the south. This route is an easy one compared to the Blue Mountains. It left the Main Northern Line at Muswellbrook and used the Merriwa Branch until it reached the small town named Sandy Hollow. At this point it turned west along the river valley and through Gulgong to another small railway halt named Maryvale, not far from Dubbo on the Main Western Line. This was the so-called Sandy Hollow to Maryvale Railway.



Although more work was done in the early 1950s and this photo was taken in 1968, by 1942 significant work had been done on the railway such that completed steel girders were on site or fabricated in shops, available for commandeering to other more urgent projects. Peter Sage ARHS 553072

Construction started with some vigour in the 1930s and was well advanced before resources ran out and the War supervened. At that time much work on the five tunnels had been done, almost all the earthworks were complete, most of the concrete bridge abutments and piers were finished and some of the steel spans for the bridges were either in place or delivered ready for installation. The fabrication method of the Woolcott Street bridge is thus explained for in the late 1930s steel girders were assembled by riveting. The 80-foot span which would later become the Dombarton bridge and then the Woolcott Street bridge was never installed across the Goulburn River and may not have

even been delivered to the construction depot at Sandy Hollow.



The girders would have been used as a deck span at Sandy Hollow. ARHSnsw collection

The Sandy Hollow to Maryvale spans were all deck girders, so only the main girders were used with a new floor system to create the through girder at Dombarton. The only information available from several newspaper reports is that they were fabricated in Newcastle. They may have still been in the shops when they were diverted to the south coast.



Although taken in 1967, many years after the span for Dombarton was 'borrowed', and not of an 80ft span, this photo well illustrates the advanced state of construction which the railway reached before its abandonment. The original intention was to use the 80-foot spans as deck girders like these at Kerrabee. Peter Sage ARHSnsw 553053

Thus, in the early 1940s with materials and labour diverted to the war, when the need arose to increase the capacity at Dombarton the solution was not to fabricate a new bridge but to borrow one from an unfinished and construction-abandoned railway.



The track at Waverton is straight and at midspan it is decidedly displaced to the left relative to the stringers as shown by the misalignment with the intersection of the diagonals of the floor bracing and the asymmetry of the four rails (two running, two check) with the stringers. Bill Phippen

In its modern apparition the bridge gives several clues to reveal its long path to Waverton. Apart from its anomalous riveted fabrication it is much wider than a single-track bridge needs to be, and the stringers in the floor still follow a curved line.



The new single-track bridge occupies well more than half of the brick abutment which once carried a double-track bridge. Bill Phippen

Since the girder has been shortened from 80 feet (24m) to 60 feet (18m) and the original closely spaced riveted end stiffeners lost, extra web stiffeners have been added over the bearings to carry the shear forces. While the rest of the bridge is riveted, these are welded.



More closely spaced web stiffeners are required to carry the large shear forces at the abutments. The span always had these, riveted in place, but they were lost when the bridge was shortened. The replacements are welded. Bill Phippen

Thus, an apparently insignificant bridge on an obscure suburban line not used by commuters

tells a fascinating story and illustrates the enthusiasm of the NSW Railways for re-cycling of assets. Woolcott Street is not the only structure to have been used elsewhere. The nearby Artarmon station building was once at Glenbrook.